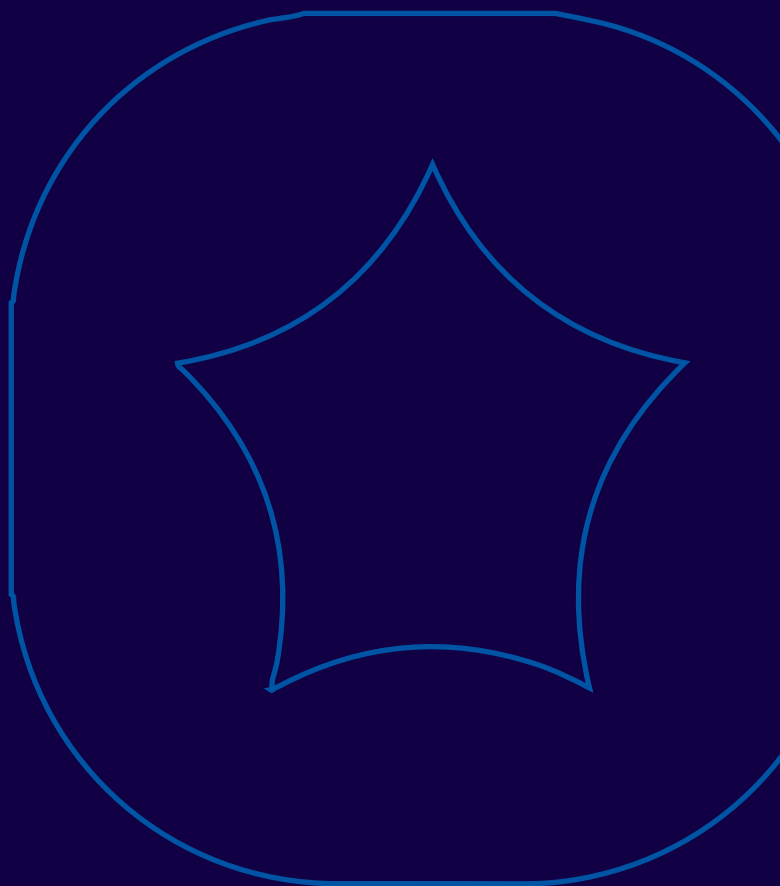




IZOLYATOR  
group



# COMPANY PROFILE

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2024



“Izolyator” is an international multi-product industrial group of companies, the main activities of which are design, production, sales, after-sales technical support and factory repair of high voltage AC/DC insulating equipment, including ultra-high voltage classes.

The whole history of origin and development of Russian high-voltage bushings as a class of electrical equipment is inextricably linked with the Izolyator plant founded in 1896. Over the century-long history, the Izolyator Group of Companies has accumulated vast experience of participation in the most large-scale national and international energy projects, experience of successful solution of the most complex scientific, technical, production and technological tasks.

“Izolyator” is an official supplier of the largest electrical and power engineering companies in the world, including nuclear power.

The Izolyator-VV production complex is a leading scientific and technical partner of the Russian National Committee of the International Council on Large High Voltage Electrical Systems (CIGRE). The National Research Committee D1 “Materials and Development of New Test Methods and Diagnostic Tools” operates on the basis of the complex.

**Alexander Zinovievich Slavinsky**

General Director of “Izolyator Plant” LLC  
Doctor of Engineering Science,  
Associate Professor  
Doctor of engineering science,  
associate professor

# Century-long experience technologies of the future



## **Our mission**

By contributing to a stable and reliable energy supply, we help everyone realize their potential.

## **Our vision**

We strive to be one of the world's leading companies in the industry and help fill the world with energy and light by creating quality power in different parts of the world through smart and forward-looking solutions in the power industry.



## **Social responsibility**

We build our social policy on the basis of a harmonious combination of the interests of the company's owners, employees, local communities and society as a whole, while strictly complying with the laws of the Russian Federation.

# Izolyator Group of Companies



## Production and sales

### **Izolyator-VV Production Complex**

High-voltage AC/DC bushings manufactured in Russia, including ultrahigh voltage classes.

### **MIM Company**

Manufacturing and testing of high voltage bushings in India, sales and after sales support in South Asian countries.

### **Izolyator-AKS Plant**

Designing, manufacturing, testing and technical support of cable fittings for 110–500 kV voltage classes, including development of designs according to individual requirements.

### **Representative office of Izolyator Group of Companies in Uzbekistan**

Sales of high-voltage equipment manufactured by Izolyator Group of Companies and development of cooperation in Central Asian countries.



## Service

After-sales technical support of Izolyator high voltage bushings and Izolyator-AKS cable fittings at all stages of the life cycle, diagnostics of high voltage equipment of other manufacturers.



## Science

Designing, prototyping and mastering in series production of highvoltage bushings, including development of advanced technologies and designs according to individual requirements.



## Testing

Testing of Izolyator AC/DC high-voltage bushings, testing of Izolyator-ACS cable fittings, testing of high-voltage equipment of other manufacturers in accordance with the scope of accreditation according to the international standard ISO/IEC 17025:2017 (GOST ISO/IEC 17025-2019).

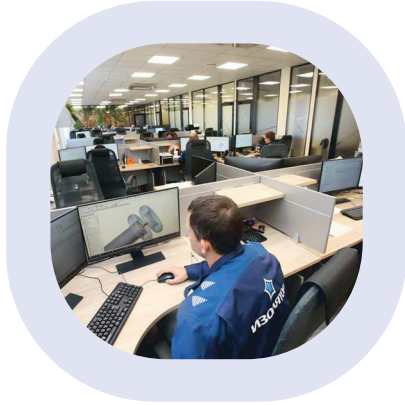


## University

Advanced training for employees of the Izolyator Group of Companies and partner companies in full-time and distance learning on the basis of a license from the Ministry of Education of the Moscow Region.



# Designing. Production. Service



## Scientific and Technical Center

- Creation of new designs of insulation equipment
- Development of advanced production technologies
- Research and development work
- Modernization of serial samples
- Highly qualified technical service
- Complex diagnostics
- Warranty and post-warranty repair of bushings
- Consulting of technical services of consumers

## Production of bushings

- The most advanced technological equipment of the world's best manufacturers
- Patented technology for production of RIP- and RIN-insulation
- Patented technology of external polymer insulation production
- Production of inner insulation up to 12 meters long and up to 750 mm in diameter



## Production of cable fittings

- Original design of stress cones and joint control bodies of our own development
- Modern high-tech equipment from the world's leading manufacturers
- Full cycle consisting of production, testing, installation training and service maintenance of cable fittings.
- Manufacturing of cable fittings for a wide range of copper and aluminum cables for core cross-section from 185 to 3000 mm<sup>2</sup>

## Testing center

- AC voltage testing up to 1200 kV
- DC voltage testing up to ±1600 kV
- 1.2/50 μs full and cut-off lightning pulse tests
- 250/2500 μs switching pulse tests
- Testing of insulating materials and prototype products



# Bushings of 10–1150 kV voltage classes

The Izolyator Group of Companies designs, manufactures, maintains and repairs AC/DC high voltage bushings of voltage classes from 10 to 1150 kV for use in “oil — air”, “oil — oil”, “air — air”, “SF6 gas — air”, “oil — SF6 gas”, “liquid nitrogen — air” operating environments.

## Innovative products

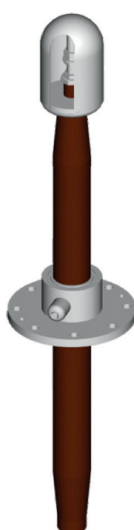
In the design of the majority of manufactured bushings the most perfect, solid internal insulation is used, which has high reliability and long service life.

There are two types of solid insulation: RIP and RIN. The RIN insulation is extremely hydrophobic and resistant to atmospheric moisture, which practically eliminates moisture in the insulation. The following are available as outer insulation: porcelain cover, polymer insulation directly applied to the inner insulation, composite cover with external silicone fins.



“Oil — air” bushings for oil switches

Voltage: 35–220 kV  
Current: 1000–3150 A  
Insulation: RIP or RIN



“Oil — oil” bushings for cable connection of transformers

Voltage: 66–500 kV  
Current: 630–2000 A  
Insulation: RIP or RIN



“Oil — SF6 gas” bushings for GIS

Voltage: 110–500 kV  
Current: 800–3150 A  
Insulation: RIP or RIN



“Air — air” line bushings

Voltage: 66–220 kV  
Current: 2000–4000 A  
Insulation: RIP or RIN



“Oil — air” bushings for power transformers and shunt reactors

Voltage: 10–1150 kV  
Current: 315–5000 A  
Insulation: RIP or RIN (up to 550 kV)



Bushings “SF6 gas — air” for GIS

Voltage: 110 kV  
Current: 2000 A  
Insulation: RIP or RIN



Bushings “Oil — air”, “air — air” for DC systems

Voltage: ±110–820 kV  
Current: 1800–5400 A



“Liquid nitrogen — air” bushings for superconductor current limiters

Voltage: up to 220 kV  
Current: до 1250 A



Removable “oil — air” bushings for power transformers

Voltage: 20–35 kV  
Current: 6–20 kA

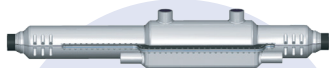
# Cable fittings “IZOLYATOR-AKS”

## CABLE FITTINGS FOR 110–500 kV VOLTAGE CLASSES

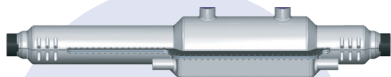
The Isolyator-AKS plant designs and manufactures high-voltage cable fittings for voltage classes from 110 to 500 kV for cable cross-section from 185 to 3000 mm<sup>2</sup> — a new business line of the “Isolator” Group of Companies.

We produce cable fittings of all types for cables with cross-linked polyethylene insulation: cable glands for connection of a power cable with an SF6 gas-insulated switchgear or a transformer (IKV), outdoor terminations with composite insulator for transition of overhead power line into cable one (IKM), including dry terminations (ISKM), cable joints with direct connection of shields (ISM) and with separation of shields — transposition (ISMR).

### CABLE JOINTS



**ISM-126 (-172)**  
**ISMR-126 (-172)**  
Max. operating voltage  
126/172 kV Cross-sections  
of cable cores for fittings,  
185–2500 mm<sup>2</sup>



**ISM-252**  
**ISMR-252**  
Max. operating voltage 252 kV  
Cross-sections of cable cores  
for fittings, 400–2500 mm<sup>2</sup>



**ISM-550**  
**ISMR-550**  
Max. operating voltage  
363/550 kV  
Cross-sections of cable  
cores for fittings,  
500–3000 mm<sup>2</sup>

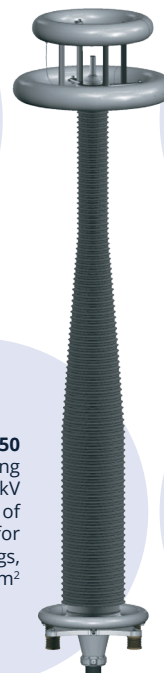
### TERMINATIONS



**IKM-126 (-172)**  
**ISKM-126 (-172)**  
Max. operating  
voltage 126/172 kV  
Cross-sections of  
cable cores for  
fittings,  
185–2500 mm<sup>2</sup>



**IKM-252**  
**ISKM-252**  
Max. operating  
voltage  
252 kV  
Cross-sections  
of cable cores  
for fittings,  
400–2500 mm<sup>2</sup>



**IKM-550**  
Max. operating  
voltage 363/550 kV  
Cross-sections of  
cable cores for  
fittings,  
500–3000 mm<sup>2</sup>

### CABLE GLANDS



**IKV-126 (-172)**  
Max. operating  
voltage 126/172 kV  
Cross-sections of  
cable cores for  
fittings,  
185–2500 mm<sup>2</sup>



**IKV-252**  
Max. operating  
voltage 252 kV  
Cross-sections of  
cable cores for  
fittings,  
400–2500 mm<sup>2</sup>



**IKV-550**  
Max. operating  
voltage 363/550 kV  
Cross-sections of  
cable cores  
for fittings,  
500–3000 mm<sup>2</sup>

# RIN — the new generation of high voltage insulation

HIGHER RELIABILITY, LONGER SERVICE LIFE, EASIER OPERATION

RIN-insulated bushings, while retaining all the advantages of their RIP-insulated counterparts, offer superior performance characteristics.



## High reliability, parameter stability and longer service life

Low water absorption of the main insulation even under intensive exposure to moisture. Low dielectric loss factor of the main insulation:  $\tan\delta$  0,20–0,25 %. Absence of partial discharges in the insulation when the mains voltage rises up to the highest operating voltage.

## Operation both at extremely low and extremely high temperatures

RIN insulation has high thermal conductivity and a low coefficient of thermal expansion. This leads to a reduction of mechanical stresses in the construction elements of the bushings, which in turn ensures high reliability and long service life over a very wide range of operating temperatures.

## Transportation and storage of bushings without moisture protection measures

The resistance to atmospheric moisture of the basic insulation allows the bushings to be transported and stored for an unlimited period of time in standard factory packaging.

## Shortened delivery time

The use of synthetic fabric eliminates the need for thermal vacuum drying of the wound insulation, which significantly reduces the bushing's production time.

Solid RIN-insulation is developed by the design bureau of the Izolyator plant in order to qualitatively improve technical and operational characteristics of the manufactured high-voltage bushings. Studies of electrical and mechanical properties of the new insulation, as well as corresponding tests were successfully conducted at the National Research University "MPEI".

Izolyator high-voltage bushings with RIN insulation were certified for compliance with GOST R 55187-2012 and certified by ROSSETI Group for use at the facilities of its subsidiaries and affiliates.



# RIN insulation is at the forefront of promising technologies

The device, which has no analogues abroad, is equipped with high-voltage “air-liquid nitrogen” bushings with RIN-insulation of 220 kV voltage class, which Izolyator designed and manufactured for the first time in the world within the framework of this project.

2019



A high-temperature superconductor current-limiting device designed and manufactured by the Super-Ox company was put into commercial operation at the Moscow 220/20 kV Mnevniky substation of the United Power Company.

2017



For the first time in Russia, high-voltage bushings placed in a cryostat with liquid nitrogen were successfully tested at the Izolyator production complex. Specially designed bushings of 110 and 220 kV voltage classes with RIN-insulation and capacitive control of the electric field withstood a temperature drop from  $-200\text{ }^{\circ}\text{C}$  at the bottom point to  $+10\text{ }^{\circ}\text{C}$  at the top point.

2020



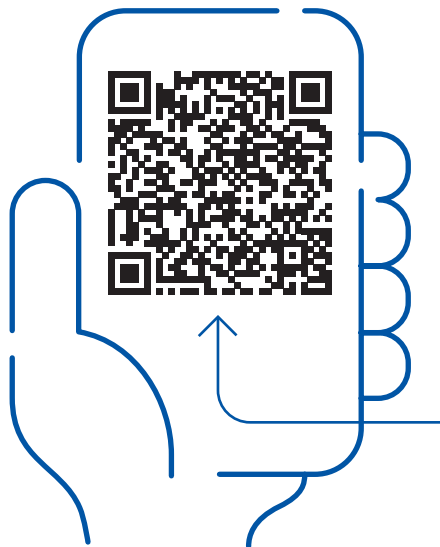
In the Vladimir region, the first Russian 220 kV voltage class bushing with solid internal RIN-insulation was installed for pilot operation.

The bushing was installed to replace the analog with paper-and-oil insulation on a 40 MBA transformer of the Dal'naya 220 kV substation of the Trunk Power Grids of the Center branch of the Federal Grid Company of the Unified Energy System.

# Build your career with us



CORPORATE UNIVERSITY  
**INSULATOR**



License to carry out  
educational activities  
from the Ministry  
of Education of the  
Moscow Region

## Compulsory programs

- Labor safety requirements
- Fire safety
- General industrial safety requirements
- Operation of hazardous production facilities
- Installation, adjustment, maintenance, repair, reconstruction or modernization of lifting facilities
- Operation of gas distribution and gas consumption networks
- Advanced training in electrical safety for electrical and electro-technical personnel
- Rules of first aid to victims

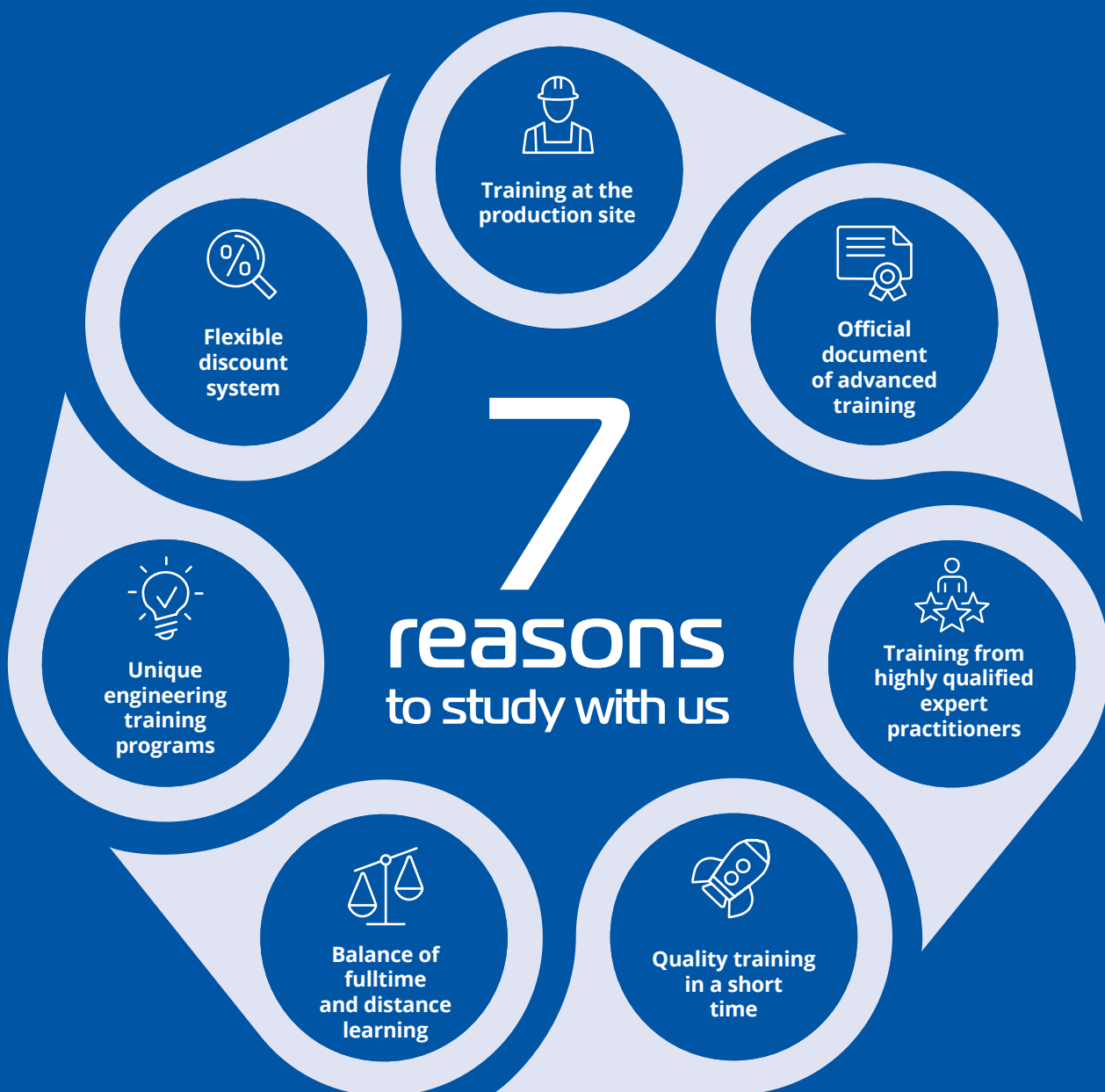
## Retraining

- Vocational training teacher
- Turner
- Milling-Machine Operator
- Maintenance Technician
- Mechanic Assembly Worker
- Electric and gas welder
- HR specialist
- Mechanical Engineer

## Advanced training

- Installation of high-voltage bushings on power equipment
- Power transformers and high voltage bushings
- Testing of high voltage bushings
- Measurements and tests in electrical installations up to and above 1000 V
- Organization and technology of cable fittings installation
- Operation with mineral transformer oil
- Modernization of measuring output unit on RIP-insulated bushings
- Development and implementation of integrated management system (IMS)
- MS Word. Template work
- MS Excel. Quick start
- MS PowerPoint. Not just presentations
- Electrical Safety (Group V)
- Safe operation of warehouse equipment and technical examination of racks
- Crane operator
- Cradle Worker
- Work at height
- Rigger

An optimal personnel training program can be specially developed for you. Based on the results of course training — recommendations for further personnel development.



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Moscow region,  
143581

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☎ zayavka@mosizolyator.ru  
☎ mosizolyator.ru/about/university

# Our history

Cable glands of the IKV type are designed for connection of high-voltage cable lines of voltage classes 110, 220, 330 and 500 kV to GIS cells and transformers.

The glands are mounted on power cable with copper or aluminum core and crosslinked polyethylene insulation. The connection dimensions of the cable glands are fully compliant with IEC 62271-209.



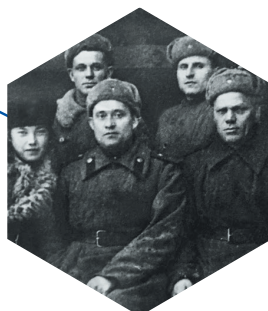
## 1964

From 1964 to 1989 the director of the Izolator plant was Alexander Alexandrovich Barkov. Under his leadership and with his direct participation, large-scale reconstruction and expansion of the enterprise were carried out, high-voltage bushings of various purposes and voltage classes were developed, transition to production of hermetically sealed bushings was carried out, production of bushings with SF6 gas insulation was mastered.



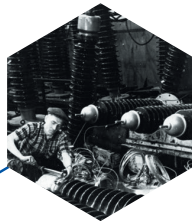
## The 1950s

In the post-war years a special design bureau was established at the plant to develop bushings for higher voltage classes. Oil-barrier insulation did not allow to solve this problem, and the plant's designers developed paper-oil insulation of the capacitor type.



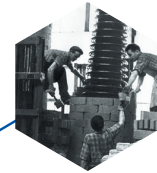
## The 1960s

At the Izolator plant, in connection with the order for the design and manufacture of bushings for the Aswan Dam in Egypt, a batch furnace with a retractable hearth was put into operation for the firing of porcelain products of large dimensions (up to 5 m high).



## The 1970s

A new production building with a large high-voltage hall (high-voltage laboratory) of 1400 square meters was built at the plant, which made it possible to fully perform electrical tests of bushings for high voltage classes.



## 1896

The Izolator plant was founded in 1896 in the former village of Vsekhsviatskoye on the outskirts of Moscow and produced low-voltage porcelain insulators for telegraph and telephone lines.



## The 1920s

According to the GOELRO plan, the Izolator plant was assigned the most difficult task — to promptly set up production of porcelain insulators for high-voltage power lines.

## The 1930s

In the fall of 1931, the first oil-filled bushings for 115 kV were produced at Izolator.



## The 1940s

Based on the resolution of the Council of People's Commissars of the USSR, the Izolator plant was evacuated and moved to the city of Kosulino, Sverdlovsk region. During the war the demand for the plant's products increased: it was necessary to restore power systems in the liberated territories, to fulfill orders of the defense industry and directly for the front.





## The 1990s

The production of oil-filled bushings for transformers, reactors, oil switches, line bushings for voltage classes 35–1150 kV, composite “SF6 gas — oil” bushings for ±400 and ±750 kV GIS, as well as 110, 220, 330 and 500 kV gas-insulated bushings has been mastered.

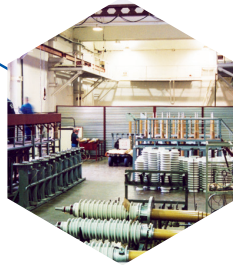
## 2004

The plant developed its own unique technology of industrial production of RIP-insulation.



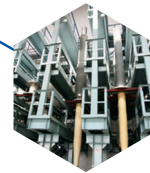
## 2007

A large-scale project was implemented to relocate the production of the Izolyator plant from Moscow to the Istra district of the Moscow region. The foundation stone of the new plant was laid in August 2006, and already in December 2007 the plant was put into operation.



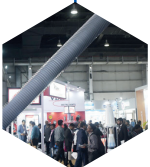
## 2008

The works on creation of a new technology for production of internal RIN-insulation of high-voltage bushings started at the plant.



## 2024

The Izolyator Group of Companies has opened a new division for the production of polymer insulators and composites — Izolyator-PIC LLC.



## 2023

At the joint stand at the 15th Elecrama International Electricity Forum in Delhi, a plan to build a new full-cycle plant in India for the production of RIP-insulated high-voltage bushings for voltages up to 420 kV inclusive was shown for the first time.



## 2022

The Izolyator group of companies has launched the repositioning of the “Izolyator” brand in the power equipment market. After the repositioning, the group of companies includes Izolyator-VV LLC, Izolyator Plant LLC and Izolyator-AKS LLC.



## 2020

For the first time in Russia, the Izolyator-AKS plant manufactured a stress cone for a cable termination of 500 kV voltage class.

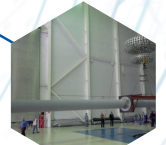


## 2018

The world's first RIN-insulated high-voltage bushings for the 220 kV voltage class designed for operation in the “air-liquid nitrogen” environment were manufactured and successfully tested. The bushings are unique in that their lower part is designed to operate at -200 °C.

## 2010

A line bushing for ±820 kV DC voltage was designed, manufactured and successfully tested. The length of the product was 21 m.



## 2015

The Izolyator plant was granted the status of a leading scientific and technical partner of the Russian National Committee of the International Council on Large High Voltage Electrical Systems (CIGRE). The National Research Committee D1 of the CIGRE RNC “Materials and Development of New Test Methods and Diagnostic Tools” was established on the basis of the plant.



## 2016

For the first time in Russia, AC transformer bushings for the 750 kV voltage class with solid RIP insulation were manufactured.



## 2017

For the first time in Russia, the Izolyator plant has developed and successfully passed acceptance tests of the “oil — SF6 gas” bushing for the voltage class of 500 kV.



## 2019

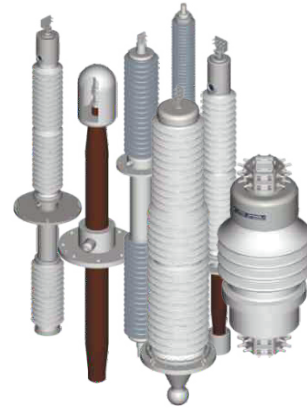
A Russian-Indian joint venture MIM was established to produce high-voltage bushings with RIP-insulation.

# Facts and achievements



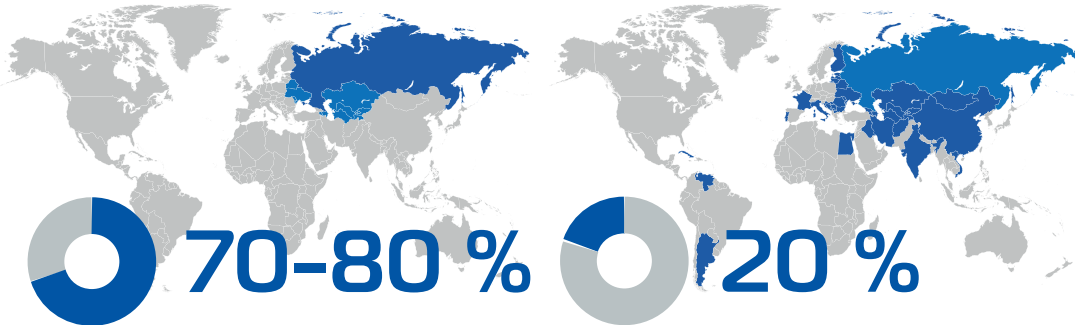
performance

**12,000** bushings  
per annum



Market share in Russia  
and neighboring countries

Share of exports in sales



Number of employees — more than **450**



Over **127** years  
of experience



Requirements  
for installation  
of cable fittings





  
**ИЗОЛЯТОР**

Testing center offers testing of high-voltage electrical equipment on a contractual basis.

The Center is accredited by the Federal Service for Accreditation as a testing laboratory and by the Association of Analytical Centers "Analytica" for

compliance with the requirements of the international standard ISO/IEC 17025:2017 (interstate standard GOST ISO/IEC 17025-2019).

Testing center including the scope of its accreditation, is included in the Register of Accredited Persons of the National Accreditation System.

The testing center includes an electrochemical laboratory.

**We invite electrical engineering enterprises and organizations to cooperate: [p.romanenko@mosizolyator.ru](mailto:p.romanenko@mosizolyator.ru), head of the testing center "Isolator". Pavel Romanenko**





WE CREATE THE BASIS FOR STABLE  
AND SUSTAINABLE POWER SUPPLY

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Website: [www.mosizolyator.ru](http://www.mosizolyator.ru)



Core business  
of the Izolyator Group  
of Companies



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